REMARKS

Applicant would like to thank the Examiner for the careful consideration given the present application. The application has been carefully reviewed in light of the Office action, and amended as necessary to more clearly and particularly describe the subject matter which applicant regards as the invention.

In the specification, the Examiner has objected to amendments to the specification made within Amendment A filed on June 7, 2004, indicating, in the Examiner's opinion, that some of the amendments introduced new matter to the application. Applicant respectfully disagrees. No new matter has been added to the application via amendments to the specification or claims made in Amendment A filed on June 7, 2004. Specifically, with regard to a specification amendment noted below,

"adjusting a fixed mirror for the double-beam interferometer which can restore the interference state to or above a threshold where fine adjustment of ~~such a degree being capable of controlling~~ an interferometer can again be effective (hereinafter called as a rough adjustment)."

This amendment does not introduce new matter. Page 11, Lines 20-22 of the specification state when rough adjustment is required: "Normally, the rough adjustment of the fixed mirror 5 is required only at a particular temporal case such as after the replacement of the beam splitter 4." Page 12, Lines 24-25 refer to a schematic representation of the rough adjustment procedure: "The procedure for the rough adjustment of the fixed mirror is shown in Figs. 6A and 6B." Page 14, Lines 7-11 describe when rough adjustment is completed stating: "Then, the motors

31 and 35 are driven so that the phase differences approach to a target phase difference and the rough adjustment is terminated when an error from the target value becomes within a predetermined value. Page 14, Line 22 – Page 15, Line 3 of the specification describe performance of fine adjustment, stating: "...the fine adjustment of the posture is performed by applying the voltage to the piezoelectric elements 27 and 34, and further the posture adjustment requiring a large moving amount which can not be attained only by the voltage application to the piezoelectric elements is attained by controlling the rotation of the motors 31 and 35." The motors move the fixed mirror, which is an example of a rough adjustment. From the foregoing, one skilled in the art would know that rough adjustment may be performed to place the interferometer into a state where fine adjustment may be performed effectively. Therefore, the amendment to the specification merely stated, in other words, what was already discussed in the application. Reconsideration of the amendments to the specification is respectfully requested.

Claims 1 through 4 stand rejected under 35 USC 112, first paragraph, as failing to comply with the written description requirement. The Examiner states that the addition "and fine adjustment of the interferometer is effective" in claim 1 is new matter. The Examiner's rejection is traversed for the following reasons. As stated above with regard to the new matter rejection in the specification amendment, the specification, at pages 11, 12, 14 and 15, describes fine adjustment, and rough adjustment used when fine adjustment is not effective enough to move the fixed mirror to the degree desired, for example from a point of non-interference of two laser light beams to a point of interference. Further pages 2 and 3 of the specification describe rough adjustment including "adjusting an angle of the fixed

mirror with respect to a laser light beam axis in a range from a state where an intensity of interference of the laser light beams becomes maximum or the laser light beams become in an arbitrary interference state." Thus, it is respectfully submitted that he written description requirement has been satisfied. Reconsideration of the rejection of claims 1-4 is respectfully requested.

Claims 1, 4, 5 and 6 stand rejected under 35 USC 103 (a) as being obvious in view of U.S. Patent No. 4,711,573 to Wijntjes et al. (hereinafter Wijntjes '573). The Examiner's rejection is traversed for the following reasons.

The present invention is directed to a method of adjusting a fixed mirror of a double beam interferometer and interferometric spectrophotometer. The method is specifically effective in rough adjustment of an interferometer, an adjustment restoring the interference state of the two beams in the interferometer into a range allowing common controls to control the interferometer. This ability to perform rough adjustment means that the angle of the fixed mirror is adjustable from a state where the laser light beams do not interfere at all to a state where an intensity of interference of the laser light beams becomes maximum or the laser light beams become in an arbitrary interference state.

The Examiner states that Wijntjes '573 discloses a method of adjusting a fixed mirror of a double-beam interferometer including a control interferometer, comprising: detecting a laser interference light beam from the control interferometer (Col 4 lines 39-44); adjusting an angle of the fixed mirror with respect to a laser light beam axis so that the intensity of interference of the laser light beams becomes maximum or the laser light beams become in an arbitrary interference state (Col 5 lines 49-54). The Examiner further states that Wijntjes '573 does not expressly state

that during the initial adjustment the laser light beams do not interfere at all, but that it would have been obvious to a person of ordinary skill in the art to make an adjustment of the fixed mirror from a state where the laser light beams do not interfere at all.

Wijntjes '253 discloses a detector array used to obtain phase detection at various points throughout the cross section of the laser beam leaving an interferometer. Individual measurements are compared with an average of the phase measurements obtained to generate correction signals to obtain precise mirror alignment. A triad of piezoelectric elements that longitudinally respond to applied voltage are used to mount the fixed mirror in the interferometer. The corrective signals obtained through phase comparison of the cross section of the exiting laser beam are applied to the piezoelectric elements to obtain bidirectional correction of mirror alignment.

With regard to claim 1, Applicant maintains that although it may be obvious to adjust an interferometer from a state where laser light beams do not interfere, to one where interference occurs, it is not obvious to perform this adjustment in the way claimed by applicant. The prior art, including Wijntjes '253 teaches only a method of fine adjustment, at a distance of a reference signal of the control interferometer in the wavelength range of the laser source. Rough adjustment is not taught using a method where an interference light beam is detected from the control interferometer. There is no suggestion of use of any method, except known manual methods that require extensive time and experience. Thus, applicant's method of performing rough adjustment is not taught by Wijntjes '253 and is not obvious in light of the teachings of Wijntjes '253. Reconsideration of the rejections of claim 1 is requested.

The Examiner notes that the initial set up of the apparatus of Wijntjes '253 could be considered a rough adjustment and the dynamic method disclosed in Wijntjes '253 a fine adjustment. Applicant acknowledges that the apparatus of Wijntjes '253 must be set up in some manner, however it is not taught or obvious that the set up method would differ from known manual methods, specifically a method where an interference light beam is detected from a control interferometer is not taught or obvious.

With regard to claim 4, Applicant maintains a spectrometer is claimed that includes an adjusting mechanism for making rough adjustments to an angle of the fixed mirror with respect to a laser light beam axis in a range from a state where laser light beams do not interfere at all and fine adjustment of the interferometer is ineffective to a state where an intensity of interference of the laser light beams becomes maximum or the laser light beams become in an arbitrary interference state and fine adjustment of the interferometer is effective. The mechanism allows restoration of an adjustment restoring the interference state of the two beams in the interferometer into a range allowing common controls to control the interferometer.

As previously stated, Wijntjes does not teach rough adjustment where an interference light beam is detected from the control interferometer. There is no suggestion of use of any method or apparatus, except known manual methods that require extensive time and experience. Thus, applicant's spectrometer including a mechanism performing rough adjustment is not taught by Wijntjes '253 and is not obvious in light of the teachings of Wijntjes '253. Reconsideration of claim 4 is requested.

With regard to claim 5, Wijntjes '253 does not teach or suggest a method of

rough adjustment including "moving the fixed mirror within the control interferometer sequentially through a series of set points positioned in relation to a starting position of the fixed mirror" as required. Rather, Wijntjes '253 discloses a detector array used to obtain phase detection at various points throughout the cross section of the laser beam leaving an interferometer. The detector comprises an array of photodetectors for measuring the intensity of the modulated laser beam at selected varying points in its cross section. Electrical signals produced by the detector are used to obtain correction of mirror misalignment. There is no indication however that the mirror is moved through a series of set points positioned in relation to a starting position as is required. If the Examiner intends to maintain the rejection of claim 5, a discussion of how Wijntjes '253 is being interpreted to teach these features of claim 5 is requested. Reconsideration of the rejection of claim 5 is requested.

With regard to claim 6, Wijntjes '253 does not teach or suggest an alignment of a laser interference light beam with an amplitude of zero as required. Rather, Wijntjes '253 teaches only mirror alignment causing beam interference. Reconsideration and withdrawal of the rejection of claim 6 is requested.

In light of the foregoing, it is respectfully submitted that the present application is in a condition for allowance and notice to that effect is hereby requested. If it is determined that the application is not in a condition for allowance, the Examiner is invited to initiate a telephone interview with the undersigned attorney to expedite prosecution of the present application.

If there are any additional fees resulting from this communication, please charge same to our Deposit Account No. 18-0160, our Order No. NGB-14886.

Respectfully submitted,

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